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FIELD TEST OF A REVISED FORM OF THE COGNITIVE LEARNING STRATEGIES TRAINING PROGRAM WITH ARMY ENLISTED PERSONNEL

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PERSONNEL AND TRAINING RESEARCH LABORATORY

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A revised form of the Cognitive Learning Strategies Training Program was administered to Army enlisted personnel stationed at a large base in the Southwest. Program components included a motivation segment, an overview of the training sequence, examples of the use of learning strategies in common situations, instruction in the use of the cognitive learning strategies included in this program, a review, and a series of posttests. A total of 108 junior enlisted personnel, representing 11 different companies, were assigned to participate in this research. Participants were divided into three groups
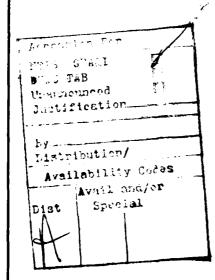
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i

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Item 20 (continued).

of 36 men: training, control, and posttest-only. Training and testing mate-
rials were selected from secondary-school curriculum materials, an encyclo-
pedia, and a newspaper, as well as from an Army technical manual. Training was
conducted in three 1 1/2 hour sessions separated by 3-day intervals. The first
posttest was administered 3 days after the conclusion of the training and the
second posttest was administered 9 days later. Analysis of the data obtained
indicated that there were no significant differences among the three groups on
either the first or second posttests. This was the first attempt to adapt the
Cognitive Learning Strategies Training Program for Army recruits and a number
of modifications in both the program and the posttest used to evaluate it are
needed. ,

FIELD TEST OF A REVISED FORM OF THE COGNITIVE LEARNING STRATEGIES TRAINING PROGRAM WITH ARMY ENLISTED PERSONNEL

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iii

FOREWORD

The Personnel and Training Research Laboratory of the Army Research
Institute for the Behavioral and Social Sciences (ARI) conducts research to
support training methods to optimize skill acquisition and retention. A
variety of research is being conducted on the effects of various learning
strategies on skill acquisition and retention. ARI, in cooperation with
the Defense Advanced Research Projects Agency (DARPA), is especially interested
in training that improves the trainee's ability to learn.

This report is one of a series on the development of the Cognitive Learning
Strategies Training Program. This report describes the field test of a revised
form of the Cognitive Learning Strategies Training Program with Army enlisted
personnel. Research was conducted at the University of Texas at Austin under
contract DAHC19-76-C-0026, monitored by Joseph S. Ward of ARI under Project
2Q161102B74F, and funded by DARPA.

JOSEPH ZEIDNER
Technical Director

v

FIELD TEST OF A REVISED FORM OF THE COGNITIVE LEARNING STRATEGIES TRAINING
PROGRAM WITH ARMY ENLISTED PERSONNEL

BRIEF

Reqirement:

    To field test a specially adapted version of the Cognitive Learning
Strategies Training Program with Army recruits.

Procedure:

    A total of 108 junior enlisted personnel were divided into three groups of
36 men: training, control and posttest-only. The training group was given
study materials and taught how to use three cognitive learning strategies:
mental imagery, verbal elaboration and grouping. The control group partici-
pants were given the same study materials but were not taught how to use
cognitive learning strategies. Members of the posttest-only group did not take
part in the training sessions but they did complete all of the posttests.
Training materials included word lists and reading passages selected from
secondary-school curriculum materials, an encyclopedia, a newspaper, and an
Army technical manual.

Findings:

    There were no significant differences among the groups on any of the
posttest measures.

Utilization of Findings:

    This study demonstrates the need for further revisions in the Cognitive
Learning Strategies Training Program before it can he used with Army recruits.
It also demonstrates the need for pilot testing of potential dependent measures
to determine which ones are appropriate for selected groups of Army recruits.

FIELD TEST OF A REVISED FORM OF THE COGNITIVE LEARNING STRATEGIES TRAINING
PROGRAM WITH ARMY ENLISTED PERSONNEL

CONTENTS

FIELD TEST OF A REVISED FORM OF THE COGNITIVE
LEARNING STRATEGIES TRAINING PROGRAM WITH ARMY ENLISTED PERSONNEL

Introduction

A revised form of the Cognitive Learning Strategies Training Program was used in this research. The revisions were based on the data obtained in a number of other investigations conducted as part of the Cognitive Learning Strategies Project at the University of Texas at Austin. This version of the training program is divided into several components. Although these will be discussed here as separate sections, there is some overlapping of program components during actual presentation, particularly the motivational segment. Part I of the program is designed to motivate the learners to apply their best efforts to mastering the strategies. Our previous field work, in both academic and military settings, provided evidence to indicate that many individuals do not immediately understand the relevance of these techniques for the tasks they are required to learn. Furthermore, many expressed or evidenced a large amount of anxiety about attempting to use new, unfamiliar strategies to help them learn information that they needed to know for a test or job performance evaluation. The purpose of this section of the program is to demonstrate the relevance of the techniques to the individual's own learning needs and the benefits that can be derived from using them to facilitate acquisition, retention, and retrieval of information.

Part II provides an overview of the training sequence and explanations of how it relates to helping individuals learn information required for coursework, employment purposes, and everyday learning needs. There is

also a brief discussion of the role these techniques can play in in-creasing participants' learning effectiveness in a variety of situations thereby making the learners less reliant on prepared curricula and course structure. This discussion stresses the importance of acquiring effective learning strategies that can be adapted to one's own needs and abilities.

The next section of the program provides some highly salient examples of the use of learning strategies in common situations. The purpose of this part of the program is to provide some early successful experiences with learning strategies. The one-is-a-bun mnemonic is introduced and built upon using content materials that are highly relevant to the parti-cular group of learners. The one-is-a-bun mnemonic is a memory system that involves both verbal and imaginal elaboration. First, numbers are associated with rhyming words (one-bun, two-shoe, three-tree, etc.). These words then become image-evoking cues for learning an ordered list of words. The learner associates the items on the to-be-learned list with the rhyming words by forming a compound image. For example, the number "one" is associated with the word "bun." If the first word to be learned is "clock," the learner would try to create an image interrelating a clock and a bun. To recall the list of words, the learner counts off the numbers, in order, and retrieves the corresponding compound image. This is followed by a review of the technique and discussion of why it is helpful for learning.

Part IV is the main section of the program. The cognitive learning strategies of imagery, verbal elaboration, and grouping are presented in the context of numerous examples of learning tasks. This section begins with simple paired-associate tasks and continues through a series of read-

2

ing passages. The content areas represent a variety of topics; their selection is dependent upon the characteristics of the learner population.

The last section is a final review of the entire program and all of its components. This is followed by a series of posttests which are used to evaluate each learner's performance. The posttests include reading comprehension, paired-associate, and free recall tasks.

Field Test of the Revised Training Program

As part of the contract with the Defense Advanced Research Projects Agency, a field test of the training program was conducted with Army enlisted personnel. A number of difficulties were encountered in attempting to adapt and implement the program in a field setting. Several of these problems are discussed in the following report of the field test.

Method

Participants. A total of 108 junior enlisted personnel, representing 11 different companies stationed at a large Army base located in the Southwest, were assigned to participate in this research in lieu of their regular duty assignments. Their selection was made by company commanders, the only restrictions being that participants must be males who had earned high school diplomas.

Participants were divided into three groups of 36 men: training, control, and posttest-only. Because of misunderstandings about the necessity of attendance at all research sessions (five for the training and control groups, two for the posttest-only group), a number of trainees were reassigned to other duties, both on and off the base, which precluded their continuation in the research. A total of 45 participants had to be dropped from the study prior to the first posttest. An additional 7

participants failed to appear for the second posttest. The sample sizes

for the first and second posttests were, respectively, training 18, 15;

control 18, 17; and posttest-only 27, 24.

Materials. Selection of training and testing materials for this

trainee population proved to be problematic because no information was

available concerning the trainees' reading level. In addition, no pre-

testing of materials was permitted. Criteria for selection were that the

materials be of potential interest to this group and that the difficulty

level of most readings be at, or close to, the eighth-grade-level. Thus,

the training readings included two Science Research Associates (SRA)

(1959) eighth-grade-level passages, one discussing gladiator fights and one

presenting an historical perspective on money; a passage distinguishing

the arteries from the veins that was taken from an eighth-grade English

textbook (Tressler & Christ, 1960), two passages from an encyclopedia

(Compton, 1974a, 1974b) one describing the shrew as the smallest mammal

and the other discussing the uses of limes; and one more difficult SRA

eleventh-grade-level passage that presented a brief biography of a

Canadian aviator.

In order to demonstrate the use of the cognitive strategies with

military training materials, another passage from a technical manual of

instructions for noncommissioned officers (Employment of Army Aviation

Units in a High Threat Environment, 1976) was also included. This tech-

nical manual was supplied by Army personnel. The reading level was un-

known, but the vocabulary and sentence structure appeared to be more

difficult when compared with the other materials included in the training.

Each set of posttest materials included a free recall list (20 words),

a paired-associate list (21 word pairs), and two readings followed by open-ended questions for each reading (the first posttest also included multiple-choice questions for the readings). The free recall and paired-associate lists were constructed using the Paivio, Yuille, and Madigan (1968) norms and included words of average concreteness (range = 3.00 to 5.50) and moderately high meaningfulness (range = 4.75 to 6.75). These lists had been used successfully in a previous study with ninth-grade students (Weinstein, 1978).

The readings for the first posttest included a newspaper article about bobcats (Harris, 1977) and another passage from the Army technical training manual describing low-flying aircraft and helicopter defense tactics. The second posttest readings included a passage from an eighth-grade government textbook (Carter, 1972) and a ninth-grade-level reading about child prodigies from the SRA (1959) materials. The multiple-choice and open-ended questions for the readings were written by the experimenters. There were 10 questions for each test.

Training Design and Procedure. Training was conducted in three 1½-hour sessions separated by 3-day intervals. The first posttest was administered 3 days after the conclusion of the training and the second posttest was administered 9 days later.

Training Group. The first session for the training group (see the Appendix for a copy of the instructions for the experimenter) began with an introduction to the purpose of the research, emphasizing the personal advantages of developing skills that facilitate learning and remembering new material, whether it be Army technical material or girl friends' phone numbers. This was followed by an overview of the training sequence

5

including brief explanations of terms and concepts to be used in the training sessions. Familiar examples of elaboration strategies were discussed, such as "the alphabet song" and the rhyme beginning "thirty days hath September" to demonstrate that the trainees had probably already used some types of elaboration strategies. These examples provided the basis for a discussion of learning as an active process in which people can manage a large portion of their own learning rather than having to rely exclusively on prepared training systems. The experimenter emphasized that people can be taught more effective methods of learning, whether the to-be-learned material relates to the acquisition of new job skills or to everyday learning needs, such as remembering the name of a new officer who has recently been transferred into a unit.

After these discussions, the one-is-a-bun mnemonic was introduced and built upon in great detail, demonstrating the use of imagery and verbal elaboration to learn some highly relevant content materials, such as a list of the best selling brands of beer. This example was designed to provide an initial successful experience in using a memory strategy and to instill in the trainees the confidence that these techniques can be learned relatively quickly, that they make sense, and that they do work. This example was followed by a brief review of the one-is-a-bun technique and a discussion of how it helped in learning the list, i.e., the mediating functions of imagery and verbal elaboration for relating new information to previous knowledge and experience.

The main section of the training program was then begun. Each of the cognitive learning strategies--imagery, verbal elaboration, and grouping-- was explained and demonstrated using simple everyday learning and memory tasks

(see the Appendix for explanations of the strategies). These included a paired-associate task in which names of businesses were paired with street names, a serial recall shopping list and a free recall grocery list.

Tasks were presented one at a time, with the experimenter providing examples of how to use the strategies. Trainees were than asked to give examples of their own use of the strategies. The experimenter provided additional examples when the trainees were slow in responding, until they understood the task and could generate their own examples.

The second day of training began with a brief review of the strategies followed by practice in applying them to three reading comprehension tasks. The readings, which included only eighth- and ninth-grade-level reading material, were distributed one at a time. While the trainees worked on each reading, writing down their strategies as they worked, the experimenters circulated among them, providing supportive and corrective feedback. After all trainees had completed a task, several examples of trainee-generated strategies were discussed, and then the next reading passage was distributed.

The third training session was similar to the second session in that it began with a review of the strategies followed by practice in using them on four reading comprehension tasks. However, it differed in that the reading tasks were progressively more difficult: two from Compton's Encyclopedia, one eleventh-grade-level SRA reading, and a passage from the technical training manual. In this session, less feedback was provided on the use of the strategies and more emphasis was placed on comprehension and recall. After the trainees finished applying the strategies to each

reading, the experimenter asked several questions similar to those which might occur on a reading comprehension test. This procedure was followed for all four reading passages.

Control Group. The control group also met for three sessions in which they were exposed to the same materials as the training group. However, they received no instructions in the use of cognitive learning strategies. Instead, they were told to learn the materials in whatever way seemed best to them. During the third session they were asked the same questions as the training group.

Posttest-only Group. The trainees in this group did not meet at all prior to testing. They did, however, complete all of the posttests.

Testing. The testing sessions were the same for all three groups, except that the training group was reminded to use the cognitive strategies. The sequence of tasks was the same for the first and second testing sessions, although the specific content differed. All words used in the free recall and paired-associate tests were displayed on a Da-Lite screen using a Kodak slide projector with an automatic timing device.

The free recall test was administered with an 8-second presentation rate and a 2½-minute recall period. The paired-associate test was presented next, using a modified study-test method with an 8-second presentation rate for both study and test phases.

The reading comprehension tests were administered as the final phase of posttesting. Two passages were distributed one at a time. For each passage, the trainees were told the length of time allotted for reading and that they would be tested over the material contained in the passage. In both sessions, the trainees were allotted 8 minutes to study the

first passage and 16 minutes to study the second passage. Additional time was allotted for the second reading in each posttest session, as these were longer than the first readings. Ten minutes were given for the completion of each posttest.

Results and Discussion

One-way analyses of variance on each of the dependent measures indicated that there were no significant differences among the three groups on either the first or second posttests. (See Tables 1 and 2 for a summary of the performance data from the posttesting sessions.) This was the first attempt to adapt the Cognitive Learning Strategies Training Program for Army recruits, and it is clear that a number of modifications in both the program and the dependent measures are needed for this population.

It is unfortunate that the dependent measures could not be pilot tested with Army recruits prior to this study. It is apparent from the results obtained (see Tables 1 and 2) that a number of these measures were not appropriate for these men. For example, the scores on the paired-associate and free recall tasks were extremely low. The group means for the Army personnel were lower than those reported by Weinstein (1978) using the same task materials with ninth graders. Future field tests in similar settings must be predicated upon the availability of posttest tasks appropriate for Army recruits.

During the debriefing sessions many of the participants provided anecdotal evidence supporting the usefulness of the program, and several modifications were suggested. A number of the men wanted more emphasis on imaginal learning strategies and more time devoted to the individual

TABLE 1

Means and Standard Deviations for the

First Posttesting Session of the Army Field Test

Task	Maximum Score	Group	N	Mean	SD
Reading 1 (newspaper article)	10	Experimental	18	5.89	2.55
		Control	18	5.62	2.86
		Posttest only	27	5.29	2.36
Reading 2 (Army Technical Training Manual)	10	Experimental	18	3.49	2.10
		Control	18	4.06	2.60
		Posttest only	27	3.22	2.22
Free recall	20	Experimental	18	8.06	3.39
		Control	18	8.22	2.60
		Posttest only	27	7.96	2.01
PAL	21	Experimental	18	3.28	3.80
		Control	18	3.28	3.60
		Posttest only	27	2.07	2.59

TABLE 2

Means and Standard Deviations for the Second

Posttesting Session of the Army Field Test

Task	Maximum Score	Group	N	Mean	SD
Reading 1 (SRA ninth-grade level)	10	Experimental	15	4.34	2.77
		Control	17	5.15	2.87
		Posttest only	24	4.90	2.43
Reading 2 (eighth-grade government text)	10	Experimental	15	4.27	2.77
		Control	17	5.84	2.98
		Posttest only	24	4.61	2.88
Free recall	20	Experimental	15	8.87	2.90
		Control	17	7.82	3.07
		Posttest only	24	7.33	3.29
PAL	21	Experimental	15	4.40	3.29
		Control	17	2.82	2.60
		Posttest only	24	3.21	3.37

learning and testing tasks.

Future Directions

The research and development effort described in this report will
continue as part of the Cognitive Learning Strategies Project at the
University of Texas at Austin. The goals of this project are to refine
our understanding of the covert processes involved in utilizing cognitive
strategies for learning and retention, and to design, develop, and field
test training programs to modify learners' information processing strate-
gies. In addition to continuing our investigations of verbal and imaginal
elaboration, we will also incorporate additional self-management skills
such as the use of study skills specifically designed to provide learners
with a means for organizing new material in a way that is compatible with
their own learning processes, or styles, so as to facilitate the use of
cognitive learning strategies. As we increase our understanding of self-
management skills that contribute to effective and efficient learning we
will be able to provide heuristic means for the individual learner to use
in identifying, monitoring, modifying and implementing a plan for achieving
instructional goals.

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APPENDIX

Session One Instructions for the Army Field Test

Hello. My name is _____ and this is _____.
We're both research associates at the University of Texas at Austin.
Before I say anything else, I would like to thank all of you for being
here today. Without people like yourselves who contribute your time and
effort to our research work, this project could not succeed.

Instructions for First Training Session

Well, I'm sure that most of you wonder why we're here to begin with,
and I'd like to start answering that by giving you a test. Now, don't
get nervous about it; it's an easy test, and I expect that you'll all get
a perfect score. Here are the instructions.

This is a multiple-choice test. Your choices are A or B. Raise your
hand to show your choice.

Let me read the two choices first. Don't answer yet, just listen to
the two choices--A or B.

Which would you rather do?

A--Sit at a desk and memorize material out of a technical training
manual for several hours? Or

B--Go and have fun with your friends?

Okay, make your choice. Everyone preferring A (studying for hours)
Raise your hand.

Now, everyone preferring B (having fun) Raise your hand.

Well, that's really what we're doing here. We realize that your job
here at Ft. _____ is important, and we know that you have a lot to learn.
But at the same time, we realize that most people really like their free

15

time, and if you could learn _faster_ and _easier_, you'd have _more_ free time. We've all been involved in learning situations throughout our lives. For example, we've all gone through formal schooling in which we were told to learn information that was sometimes difficult and boring. Teachers expected us to remember history dates, names, and events that didn't mean much to us. We were supposed to memorize new words and word meanings that didn't seem important. We were told to read pages and pages of material out of a book and then be able to answer questions about it. Try to remember back when you were in school; remember how difficult it was to sit up late the night before a test, trying to memorize information that you couldn't care less about?

One of the worst things about all of that was that we were never taught _how_ to learn; we were just told to do it. Being older now, and looking back on that, it doesn't seem very fair. If wasn't necessarily our teacher's fault though, because they had never been taught how to learn, either.

What we'll be doing today, Wednesday and Friday can help change all of that. We'll be learning short cuts - _easier and faster ways of learning and remembering new material_, and the surprising thing is that it's all easy and it can be fun. Anyone can learn the skills that you'll be learning and using. Just think of the advantages of being able to learn easier and faster. If you were still in regular schools, you wouldn't have to spend as much time and effort doing your homework, creating more free time for yourself. And on top of that, your grades would have been better.

Well, the fact is that we're _still_ students; we always will be. We're

learning all the time, every day. Some things are pretty easy to learn. In fact, sometimes we learn a lot more than we think we do. For example, if you have a favorite football or baseball team, you have probably learned some of the player's names and positions. You've learned the names and ranks of your friends and acquaintances since coming to Ft. _____, and you've learned your way around Ft. _____ itself, a very large Army post. We all learn new things every single day. Yet some learning, especially learning technical material from manuals and class notes, can be difficult, boring, time consuming, confusing, and frustrating. But do you want to know something exciting? It doesn't have to be that bad, because much of the research that we've done in the past has shown us that there are, indeed, easier and faster ways of learning, and that's what you'll be learning--ways to help yourself learn. .

All we need from you is some honest effort. Listen to us, practice what we teach you, try to take advantage of the opportunity you have to make your life more enjoyable.

You know, what you learn here can be used the rest of your life; in fact, if you have kids, you can teach these skills to them, making their school days much easier than yours were.

Actually, there are many examples of learning aids which you have probably used for years even though you may not have realized that what you were doing was helping yourself learn something more easily. One of the first aids that you probably ran into and put to good use was the alphabet song - A, B, C, D, E, F, G.....This was a learning aid because it made the alphabet easier to learn and to remember, and that was pretty tough to do when you were four years old. Another was to help you learn

how many days were in each month; 30 days hath September, April, June, and November; all the rest have 31, except February.....

Remember these little tricks? Or others like them? How about this one? "I" before "E," except after "C" or when it sounds like "A" as in neighbor and weigh.

So, you see, what we'll be doing is not entirely new to you; what is new is that we'll be working with "adult" material and information. After all, you already know the alphabet.

Before getting down to the business of really "learning how to learn," let's talk just a minute about learning and memory. These topics are very important in education and psychology. In fact, one of the biggest problems that teachers and trainees face today is that much of the research conducted in the past has failed to find out the things we need to know. But here are some interesting facts about learning and memory that we have discovered.

People are active learners. They actively work with, and think about materials that they are trying to learn. In the past, we've considered people to be almost like containers that just sit still and fill up with things. We've thought that students just sit while teachers fill their heads with information. But that's not true. When someones tells us something or when we read something, we think about it; we remember some parts better than others, and we usually learn things that are interesting and familiar to us far quicker and better than things that aren't interesting and famiiiar to us personally.

A second interesting fact is that people aren't just born being able to learn easily. For hundreds and hundreds of years, teachers have been directing their students to learn new material without telling them how.

18

Common sense should tell us that we need to know how to learn. Therefore, we are going to give you some material to learn, but we are also going to show you different ways to learn it.

These different ways to learn, these tricks, or skills, or techniques, or whatever you want to call them, are called mnemonics, or memory aids. Here's an example of a memory aid called "one is a bun." It is a rhyming memory aid used to learn lists of things in order. You'll understand what I mean in a minute--but right now, look at the following number-word rhymes (projected on a screen):

ONE   -   BUN

TWO   -   SHOE

THREE -   TREE

FOUR -   DOOR

FIVE -   HIVE

The first step in using this memory aid is to remember which words go with which numbers. That should be easy since you might already know two of them from this rhyme out of your childhood; one-two, buckle your shoe; three-four, shut the door; five-six, pick up stick.. seven-eight, close the gate; nine-ten, a big fat hen. They all rhyme in a way that's easy to remember.

Take a few minutes now to learn the words that go with the numbers. Once you know the words, I'll show you what to do with them. Use the paper and pencil that you were given to test yourself. Go ahead; if you have any questions, just raise your hand.

The next step in using this memory aid is to get your imagination working. Once you've done these two things, the rest is easy. Here's an example. There are five leading brands of beer in this area according to

sales volume (projected on a screen):

LONE STAR

PEARL

COORS

BUDWEISER

SCHLITZ

What we're going to do is to learn this list of beer brands, in order, using the memory aid "one is a bun," so that if I asked you, "What is the third largest selling beer?" you would be able to remember that it was Coors right away.

Okay, here's how you do it. You've learned the words that go with the numbers 1 through 5. One-bun, two-shoe, three-tree, four-door, five-hive. Now comes the fun part - using your imagination. Number one on the list is Lone Star. In the rhyming memory aid, the Number one is a bun. Now, picture a really clear scene in your mind in which a bun is doing something with a star. Picture an active scene, one that's really doing something. For example, it would be okay to imagine a star between two halves of a bun-- a star sandwich--but it would be even better to imagine someone that you don't especially like biting down into a tin star sandwich, breaking all of this teeth. Give this a try; close your eyes and get this picture as clearly in your mind as possible--someone sitting in the snack bar with a star sandwich; he bites down on it, his teeth crack and break! The important parts of this picture are the bun and the star. It might sound kind of silly and ridiculous, and there's a good reason for that; it is kind of silly and ridiculous, but that helps you to remember it.

The idea is that beer brand #1 is Lone Star. Since one is a bun, we want to put star and bun together. If I ask you, "What's the number one

selling beer," you would think, "one is a bun" and then picture, in your mind, the scene that you imagined which put star and bun together. Another example of what you might picture could be a great big star, sitting at a table in a nice restaurant eating a hamburger bun the size of a truck tire. Remember, make your mental picture an active one; make it a ridiculous one; make it one you'll be sure to remember.

Let's look at #2--Pearl. Remember now, two is a shoe, so you want to imagine a shoe doing something with a pearl. For example, you could picture a large white pearl with skinny legs marching in a parade, wearing a pair of bright orange shoes which are bigger than the pearl itself. Or you might imagine a great big shoe, the size of a house, falling from the sky and crushing a white pearl the size of a man. Again, give this a try. Close your eyes and imagine a man-sized pearl sitting in the middle of a field. All of a sudden you see a house-sized shoe falling from the sky and smashing the pearl into a million pieces.

Again, this sounds crazy, but that's good. You see, the sillier, more active, the better, because it helps you to remember. If I asked you, "What's the number 2 selling beer," you could say to yourself, "two is a shoe," and you could readily remember that pearl being smashed by the monster shoe from the sky. The answer would be Pearl.

Let's practice this a little more because it's important. Remember, our final goal is to learn the five leading beers, in order. Now not all of these beer brands will be that easy. You may need to change the beer name a little in order to get a picture of it. For example, number 3 on the list is Coors, yet the word coors doesn't really call up a picture like star and pearl do. But if we find a word similar enough to Coors, it will still work. For example, by changing the first letter from "c"

21

to "1," we have "loors"--like fishing lures. So your mental picture can have a tree (three is a tree) associated with lures, which sounds enough like Coors to help you to remember that brand #3 is Coors. Again, then, imagine a scene in which a tree is doing something with a fishing lure. You might picture yourself casting into a river and getting your lure tangled up in underwater tree limbs, but it would be even better to picture a scene in which you cast your favorite fishing lure, and just before it hits the water, a tree jumps up and reaches out and grabs your lure and stuffs it into its mouth. When I ask, "What's the third largest selling brand of beer," you could remember that "three is a tree" and remember the image of a tree grabbing your lure and that would be enough to remind you that #3 is Coors.

Let's go to #4--Budweiser. Again, we'll need to do something with the word. How about using Bud Man? Since four is a door, we need to have a scene in which a door is doing something active and vivid with Bud Man. Let's have someone else give an example. Who'll volunteer?

(Experimenter gives feedback.)

How about #5--Schlitz--five is a hive?

(Experimenter gives feedback.)

Now, to make practical use of what we've done, try to recall the list in order. You can do this by thinking of brand #1--"one is a bun"-- and then thinking of the image that you imagined that included the bun. Mine was a star sandwich breaking some teeth. Likewise, two is a shoe. I remember the shoe crushing the pearl.

Three is a tree - (grabbing the lure) - Coors

Four is a door - Budweiser

Five is a hive - Schlitz

That's all there is to it. You've learned the list in order, and although this list was pretty easy, it works just as well with <u>longer</u> lists and <u>more</u> difficult items, like, for example, the types of things that <u>you</u> might be expected to learn out of a tech manual.

This is a good example of what I called mnemonics, or memory aids. We won't work with this particular one again, but the ones that we <u>will</u> use are similar and just as easy.

Let's discuss some of the specific skills you can use to help you learn. We'll start with a sample task.

Suppose you were trying to learn and remember the street locations of the following businesses (projected on a screen):

BUSINESS	STREETS
LAUNDRY	RIVER STREET
LIQUOR STORE	EMERSON AVENUE
SAFEWAY	LOCKE STREET
DRUG STORE	HIGHLAND PLAZA
STEREO SHOP	HOLLY CIRCLE
McDONALD'S	FRENCH BOULEVARD

There are several ways of attacking the problem of learning the street names associated with the businesses. One way would be to use a technique called "mental imagery," in which you concentrate on a mental picture which connects the two words.

This is exactly what we did with "one is a bun." Remember, we pictured a scene in which a star <u>did</u> something with a <u>bun</u>? This time you need to picture a story in which a <u>laundry does</u> something <u>active</u> with a <u>river</u>.

23

For example, as you know, people in the past actually did use rivers, streams, and lakes for doing laundry. So an appropriate mental picture for "laundry-River Street" might be to imagine a commercial laundry building built upon on pilings or stilts about six feet above a river. It might have large doors which open up so that workers can lean out and use the river water to wash all the clothes that people bring in rowboats. It's very important to really think about your picture or story. Picture it really clearly in your mind. You can make your scene as elaborate and silly as you want because the more you think and concentrate, the better you will learn. For example, you could imagine this scene: a girl sitting on the bank of a river, scrubbing her laundry on a large stone. All of a sudden, the river begins acting bizarre, trying to rip the clothes out of the girl's hands. She fiercely hangs on, screaming insults at the river until a crocodile swims up, eats her, and then folds her laundry and crawls back into the river to go home.

Remember, what we're doing is making up a mental picture or story which shows two things doing something with each other. If I walked up to you and said, "Hey, where's a good laundry?" you could picture, in your mind, the story about the girl doing laundry at the river and say, "There's one on River Street."

Here's another example. "Liquor store-Emerson." One of my favorite football players has always been Emerson Boozer, an ex-running back for the New York Jets. Now, I can equate liquor with "booze," so a really good image for me to picture would be to imagine a great big football player with the name Emerson Boozer written across the back of his jersey walking into a liquor store, buying four cases of booze, and

24

carrying them out smiling. Again, this picture could be just as fancy and crazy and silly as I wanted it to be. You might picture this same great big football player with his name on his jersey leaning against a bar. In walks his coach, an old, gray-haired man. He walks up to Emerson Boozer and says, "Emerson, you really are a boozer." Then Emerson Boozer says, "To heck with you; I'm going to the liquor store," and runs out, knocking people down as he goes.

Let's look at the rest of the list. What are some good, active mental pictures for:

SAFEWAY	LOCKE STREET	money in safe, lock, put it away
DRUG STORE	HIGHLAND PLAZA	drugs make you high, wander into highlands
STEREO SHOP	HOLLY CIRCLE	stereo for Christmas, wreath is a circle of holly
McDONALD'S	FRENCH BOULEVARD	eating french fries at McDonald's

These mental pictures and stories will help you to remember things that you learn. They are one type of memory aid.

Another way to learn these pairs (businesses - street names) would be to "elaborate" on them. All this means is to think of some thing that you already know which will make the two words fit together in some way. In other words, you must think of something that would help you to connect the two words together.

For example, with "laundry - River Street" you might just concentrate on the fact that many people in the past did do their laundry in the river. They had to; that's the only place that there was enough water. Or you might just think about the fact that water is the most essential

ingredient used in doing laundry and that much of the water used in homes comes from rivers. Again, this is information that you already have; this is something that you already know. So what you are doing is using information, or things that you already know, to "bring together" the words laundry and river.

Let's take another example. How about "McDonald's - French Boulevard." For my own tastes, about the best thing served at McDonald's is their french fries. I already know this because I've eaten there many times, and remember, what we're doing is using things that we already know to learn something new. Thinking about this connection--McDonald's-french fries--would be enough to help me remember the street name (French) when thinking of McDonald's.

A second example of this one might be that if there were McDonald's in France, and in fact, there are, they might look different and have a different menu than America's stores.

Let's look at the rest of this list again. Once more, what you need to do is think of some reasonable way of bringing the two words together so that you can remember the street name of the business. What would some elaborations be for:

LIQUOR STORE	EMERSON AVENUE
SAFEWAY	LOCKE STREET
DRUG STORE	HIGHLAND PLAZA
STEREO SHOP	HOLLY CIRCLE

Remember, what you are doing is using things that you already know to help you learn what you are trying to remember.

Once you have made use of mental imagery and elaboration to learn the

street names of the businesses, it's usually easy to recall them.

Here's another example of the use of mnemonics, or memory aids.
Picture yourself in the following situation. You've borrowed a friend's
private apartment for the evening. You have a date with a special girl,
and you've promised to wine and dine her at the apartment before a late
movie. Here's your shopping list (projected on a screen):

WINE

CRACKERS

CHEESE

CHARCOAL

CHARCOAL LIGHTER

STEAKS

POTATOES

CORN ON THE COB

LETTUCE

TOMATOES

GREEN ONIONS

CHERRY PIE

There's really no need to have to write down a list of any kind, even one
this long or longer. By using mental imagery and elaboration together you
can imagine your evening's progress in your mind while actually shopping
for your groceries. Your fantasy might go like this--the doorbell rings,
she comes in, and the first thing you offer her is a glass of wine (ah ha!
Wine is #1 on the list). While you are talking, you offer her hors d'oeuvres
(cheese and crackers--#2 and #3 on the list). After a little while, you
start the fire (charcoal and lighter, #4 and #5). When the fire is ready,
you put the steaks and potatoes on to cook (#6 and #7): while that's cooking,

you put the corn (#8) on to cook and ask her to make the salad out of
lettuce (#9), tomatoes (#10), and onions (#11). Now picture yourself
sitting at the table. As you look at your plate, all of your food items
are visible--steak, potatoes, corn on the cob, and salad. Of course,
you'll finally serve her cherry pie (#12) for dessert. You've memorized
your list without really trying.

This is just one story; many others are, of course, possible. Let's
work on one together. Let's start with an old wino (#1 on list) sitting
in an alley, sipping on a bottle. What happens next? (Experimenter gives
feedback).

So, you see, by using mental images, or pictures in your head, along
with a story you create to connect the pieces, you can memorize what at
first might seem to be an impossible list.

Since we did so well with the shopping list, let's use another one
to demonstrate a third memory aid - grouping.

Here's another shopping list to learn (projected on a screen):

MILK

HAMBURGER

PORK CHOPS

BEER

AJAX

WINE

STEAKS

SQUASH

SOAP

SHAMPOO

TOMATOES

You might notice that some items seem to be alike. For example, milk, beer, and wine are things that we drink; hamburgers, pork chops, and steaks are meats; lettuce, squash, and tomatoes are side dishes (like vegetables); and Ajax, soap, and shampoo are cleaning aids. If grouped in this manner, the list becomes much easier to learn. (Projected on a screen):

MEAT	DRINKS	VEGETABLES	CLEANING AIDS
HAMBURGER	MILK	LETTUCE	AJAX
PORK CHOPS	BEER	SQUASH	SOAP
STEAKS	WINE	TOMATOES	SHAMPOO

You can first remember that there are four groups and that each group contains three items.

Now you can remember and make use of the other strategies we've been talking about--imagery and elaboration. For example, you've formed four groups--meats, vegetables, drinks, and cleaners. Using mental imagery, you might picture a round kitchen table divided into four equal parts like a pie. Section one contains mounds of raw meat (#1); section two is spilling over with drinks (#2); section three is piled high with fresh vegetables (#3); and section four holds enough cleaning aids to take care of the mess caused by the other three sections. Once you've learned the names of the four groups, using mental imagery, you can just carry it further to learn the items in each groups.

For example, using mental imagery to learn the items under MEAT, you could picture a six foot tall hamburger with human features, sitting at a dining room table, eating pork chops and steak for dinner. Or you might imagine a guy with a really weird-looking face made up of a sirloin steak

mouth, a hamburger nose, and two pork chop eyes, walking up to you in a dark alley. But remember, you must really picture these scenes in your mind and think about them.

Let's look at the other three categories. What would be a good mental image to help you remember the items under vegetables? (Experimenter gives feedback.) Under drinks? (Experimenter gives feedback.) Under cleaning aids? (Experimenter gives feedback.)

Now, let's look at elaboration. Again, consider the four main groups first. Using elaboration, you might think of your own ordinary eating arrangements. You usually have meat, vegetables, and a drink, and afterwards it takes cleaning agents to finish the job on the dishes. Or, you might consider the way you feel after a full day of using cleaning agents to clean up a filthy barracks. You would very likely be ready for a big meal consisting of meats, vegetables, and drinks.

Again, once you've learned the four groups using elaboration, you can use the same techniques to learn the items within each group.

For example, consider the drinks. Now I, for one, have tried many different kinds of drinks in my life, and milk, beer, and wine are just about my favorites. Therefore, just thinking of my three favorite drinks will enable me to recall the three items listed under drinks. A second example might be that on a nice, hot Saturday afternoon at a lake, beer is just about a necessity. Later that night, out with a date, you might very well drink wine. The next morning would be an appropriate time to help settle your hungover stomach with a glass of cold milk.

Let's look at the other three categories. How would you elaborate on the items under meat? (Experimenter gives feedback.) Vegetables?

(Experimenter gives feedback.) Cleaning aids? (Experimenter gives feedback.)

Now an even more powerful technique is to use <u>both</u> imagery <u>and</u>
elaboration and try to relate the to-be-remembered items by making up a
story. When you combine these aids like this you are even more likely to
remember them. Let's give it a try. Going back to what we did previously,
using elaboration, you know that an ordinary meal might consist of meat,
vegetables, and drinks, followed by the use of cleaning aids to clean up.
So picture yourself at a kitchen table, getting ready to chow down on a
home-cooked meal. Looking at your plate, you find meat and vegetables;
your drink is beside your plate; and the cleaning aids are nearby at the
sink. There are your four main groups.

While you are eating, the doorbell rings, and you answer it. The
man at the door says, "Hi, I'm a meat man, and I'm delivering my three
bestselling items to you." You could probably guess what they might be
before you saw them because of what you already know about the meats that
<u>you</u> and other people like to eat, but his looks are a dead giveaway.
His face is the one we imagined earlier--a sirloin mouth, hamburger nose,
and pork chop eyes. There are the members of the meat group.

Again, this is a pretty ridiculous story, but it's easily remembered,
and <u>that's</u> what we're doing here to begin with. So let's carry the story
further to complete the other three groups. What happens next? (Experimenter gives feedback.) In order to make use of what we just did, follow
through with your thoughts (or elaborations) and mental pictures from
beginning to end. There's your list.

We've covered a lot of new ideas in a short period of time, so let's

review. We've talked at length about three different types of techniques

that can really help you learn new material and information more easily

and quickly. These were:

1. Mental imagery - imagining pictures in your head which associate

words and ideas. Remember the example of the laundry on River Street?

2. Elaboration - forming sentences, stories, etc., which make new

ideas and information more meaningful to you by relating them to what

you already know. Remember the example of McDonald's on French Street?

3. Grouping - forming logical or related smaller groups from a

long list and then using imagery and elaboration to learn the items.

Remember the example of the grocery list?

In our next session we will work again with memory aids and we will

help you to continue learning to use them so that you can learn the in-

formation or procedures contained in materials you like to read or need

to know for your work. You will discover for yourself that what you've

learned today will probably really help you to learn and remember this

type of new material as well. I think you'll find the next session to

be very enjoyable. If today has been a little confusing to you don't

worry. That's very natural if it happens. But we'll do all of this

again; we'll practice until it becomes easy--and it will.

Between now and then, try to think about and practice the skills we've

worked with today. If you are reading through a newspaper, for example,

pick out an article, maybe in the sports section, and use mental imagery,

elaboration, and/or grouping to learn the information in it. Test your-

self to see how you've done. If you have any trouble, don't worry. By

the time we're through, it will seem easy.

Remember, with a little practice, these skills can really be valuable to you for the rest of your life. You can use them now to learn things for your job and in the future to learn new job skills. It's worth the effort.

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35

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